
5.0 ENVIRONMENTAL DESIGN MEASURES

This chapter describes those measures that would be implemented to reduce or eliminate potential adverse impacts to the human and natural environment. Many of these measures have been incorporated as standard operating procedures by USBP on past projects. Environmental design mitigation measures would be presented for each resource category that would be potentially affected. It should be emphasized that these are general mitigation measures; development of specific mitigation measures would be required for certain activities implemented under the Preferred Alternative or the Full Build Out Alternative. The proposed mitigation measures would be coordinated through the appropriate agencies and land managers/administrators, as required.

It is policy, however, to mitigate adverse impacts through the sequence of avoidance, minimization, and finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc. and is typically coordinated with the USFWS and other appropriate Federal and state resource agencies.

5.1 GENERAL CONSTRUCTION ACTIVITIES

BMPs would be implemented as standard operating procedures during all construction activities such as proper handling, storage, and/or disposal of hazardous and/or regulated materials. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents would be collected and stored in tanks or drums within a secondary containment system that consist of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery would be completed following accepted guidelines, and all vehicles would have drip pans during storage to contain minor spills and drips. Although it would be unlikely for a major spill to occur, any spill of 5 gallons or more would be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) would be used to absorb and contain the spill. Any major spill of 5 gallons or more of a hazardous or regulated substance would be reported immediately to on-site environmental personnel who would notify appropriate Federal and state agencies. A SPCCP would be in place prior to the start of construction and all personnel would be briefed on the implementation and responsibilities of this plan.

All waste oil and solvents would be recycled. All non-recyclable hazardous and regulated wastes would be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures.

5.2 SOILS

Vehicular traffic associated with the construction activities and operational support activities would remain on established roads to the maximum extent practicable. Areas with highly erodible soils would be given special consideration when designing the proposed projects to ensure incorporation of various erosion control techniques such as, straw bales, aggregate materials, wetting compounds, and revegetation, where possible, to decrease erosion. In addition, erosion control measures, as required and promulgated through the SWPPP, would be implemented before and after construction activities. In cut and fill areas, topsoil would be removed and stored separately. The topsoil would be used as a top dressing on developed slopes to facilitate revegetation efforts with native plant species (mainly grasses) species that have a low water evapotranspiration rate.

5.3 VEGETATION

Native species would be used to revegetate slopes and other “unused” areas to comply with requirements under Section 7(a)(1) of the ESA. On developed slopes north of the secondary fence, shrub species would be used in an effort to compensate for some losses of the scrub-shrub community. Native plants, which are compatible with the enhancement of protected species, would be relocated to suitable areas to the extent practicable as required under Section 7(a)(1) of the ESA. In addition, a Notice of Intent to Clear Land would be filed in order to allow coordination with state agencies to relocate plant species as required under the Arizona State Plant Law. These specimens would also be relocated to the developed slopes north of the secondary fence or patrol road. A qualified biologist or natural resource representative would be available to provide coordination with appropriate agencies and guidance as needed to interest groups, and individuals, regarding plant relocation. Additional mitigation measures would include BMPs during construction to minimize or prevent erosion and soil loss. Vehicular traffic associated with

engineering and operational support activities would remain on established roads and within the project corridor to the maximum extent practicable.

5.4 WILDLIFE

Wildlife specimens are expected to be lost during construction activities due to removal of habitat. Physical contacts to wildlife would be avoided to the fullest extent practical during construction, as well as post construction operations. A qualified professional biologist or natural resources representative would be available to provide guidance to construction crews or USBP agents on BMPs and supervise relocation of wildlife specimens when possible.

Potential habitat fragmentation would be minimized under the Preferred Alternative. Other levels of minimization would be accomplished through the incorporation of vehicle barriers, which augment the development of a safe and effective corridor system (wildlife pathways) and allows free movement of animals across the U.S.-Mexico border. Corridors act as a connection between two or more otherwise isolated habitats and provide for animal movement and reproduction (Tran 1997). In a general sense, an effectively designed corridor system would insure that an interconnected strip of compatible habitat (vegetation) that is sufficient to temporarily sustain animals would connect the two target habitats. This area would then be surrounded by a buffer zone that protects it from outside human and urban activity. The degree and size of this corridor would depend greatly on which species are targeted.

It must be noted that no one wildlife corridor design alone would completely mitigate the anticipated impacts. Furthermore, there are no specific designs absolutely proven to work for any one species. Rather, a series of pathways designed to target as many species as possible would be the best approach. However, the key factor to any effective pathways is to provide a vegetated corridor that bisects the project corridor and allows free access similar to that described above. Mitigation measures would be analyzed for effectiveness and feasibility to promote both wildlife corridors, as well as the mission of the USBP. However, they would not be limited to the following measures:

- Maximize vegetation within wildlife pathways to the maximum extent possible to include revegetation and reseeding where required.
- Restrict the use of lighting along pathways to an as-needed basis, or restrict lighting to pathways that are designed to target light tolerant species. Incorporate nearby RVS systems to detect UDA traffic.
- Bollard or Sandia style fencing equipped with reptile and small rodent tunnels at the base to allow small ground dwelling animals free access across the border.
- To the extent practicable, use a fence design such as Sandia style or bollard style that would be semi-transparent so that animals are not psychologically intimidated from crossing corridors.
- Incorporate the use of vehicle barriers wherever possible along the primary fence alignment to maximize large animal crossings and maintain 5-strand barbed wire fencing to protect pathways from degradation by grazing cattle.
- Reduce the footprint of proposed roads within the project corridor in targeted in order to minimize the effect that these would have as impedances to migration.

Actual design, amount, acreage and placement of this system would require close coordination and cooperation with appropriate Federal and state agencies, as well as involved land managers prior to initiation of construction. Implementation of this mitigation measure would require a specialized conservation plan that would target as many species as possible and protect it from degradation by UDA activity and other human induced factors.

5.5 PROTECTED SPECIES AND CRITICAL HABITAT

Through properly designed mitigation measures, impacts would be reduced to a “may affect but not likely to adversely affect” the spikedace and loach minnow or its critical habitat. It is policy to mitigate adverse impacts through the sequence of avoidance, minimization, and finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc. and is coordinated with the USFWS and appropriate state resource agencies. The following potential measures and conceptual plans would be analyzed by USBP for suitability to mitigate for potential losses and impacts:

- Construction of the low-water crossings would occur during the dry season so that actual aquatic habitat is not directly affected. Construction plans would also include erosion control measures, riprap to prevent long term scouring

downstream, and maintain pre construction stream flow. Additionally, limited vegetation clearing along the riparian areas of the streambed would allow for protecting existing aquatic habitat.

- Incorporate additional RVS systems to enhance vehicular patrol traffic in both critical habitat areas and minimize possible physical encounters.
- Reduce the overall disturbance of critical habitat by reducing the footprint of the project corridor within critical habitat the extent practicable.
- Incorporate wildlife corridors to minimize potential habitat fragmentation in critical habitat, such as proposed in section 5.4
- Avoid long-term effects to the San Pedro River by revising low-water crossing designs for patrol roads to a “Box Culvert with Grates” design.
- Develop project specific plans through a conservation agreement with appropriate Federal agencies designed to utilize proposed infrastructure to protect existing critical habitat north of the project corridor and/or mitigate restoration of additional critical habitat. These plans would be closely coordinated with, and approved by, the USFWS and appropriate state resource agency(s) prior to initiation of construction.

Final mitigation plans shall be negotiated with the USFWS under the Section 7 consultation process.

5.6 CULTURAL RESOURCES

Mitigation measures for cultural resources would primarily be in the form of data recovery since neither the Full Build Out Alternative nor the Preferred Alternative would allow for relocation of the project corridor or avoidance of historic sites. Additional testing would be conducted at sites where the NRHP eligibility status could not be determined during the initial survey. If these sites were determined to be eligible for listing in the NRHP, then data recovery or other mitigation measures would be developed on a site-by-site basis to help minimize adverse impacts. Mitigation and data recovery plans would be developed in consultation with the Arizona SHPO and/or THPO. Archaeological monitors would be used when construction activities are taking place close to known sites to further minimize impacts to potentially significant cultural resources. Furthermore, if sites are revealed during the construction phase, all work would be halted and the Arizona SHPO would be notified. Work would not continue on the specific site until all appropriate testing, data recovery and authorization is obtained.

5.7 WATER RESOURCES

Any of the action alternatives would require a SWPPP as part of the National Pollutant Discharge Elimination System (NPDES) permit process. Similarly, wetlands or Waters of the U.S. are expected to be affected, so early coordination by USBP with the USACE Los Angeles District, Regulatory Branch and Arizona Department of Water Resources would be conducted. Applicable Section 404/401 permit procedures shall be completed prior to initiation of the construction activities within drainages. Mitigation and compensation measures would be implemented through the permit process to ensure no net loss of Waters of the U.S. including wetlands, as appropriate.

Conservation measures aimed at mitigating the withdrawal of water from the Upper San Pedro and Douglas basins would include approved conservation measures (e.g., use of recycled water, prohibit construction during high wind periods, etc.) that would reduce the water usage by USBP operations, measures that would promote the reduction of evapotranspiration, and mitigation funding to improve the recharge in the basins. Other potential measures include:

- Reduce evapotranspiration rates through removal of invasive plant species such as salt cedar throughout the project corridor and replace with low water use native species.
- Incorporate water conservation measures Naco and Douglas Stations that reduce the consumption of water due to USBP operations. These include replacing high water use fixtures such as faucets, and toilets with on demand faucets and waterless urinals.
- Provide mitigation funding to promote conservation measures across the Upper San Pedro basin such as obtaining conservation easements that reduce or set aside irrigated farmlands.

Since floodplains and wetlands are unavoidable, the following mitigation measures would be implemented as part of construction in order to minimize potential impacts, as required under EO 11988 and EO 11990. All planned mitigation measures would undergo coordination with appropriate Federal agencies and local municipalities to achieve final approval through the permit process, as well as the public involvement process prior to any construction within designated floodplains or wetlands.

- Silt fences would be erected outside of the wetland/non-wetland interface to minimize the siltation and subsequent degradation of jurisdictional wetlands.
- All structures would be designed by professional engineers to not adversely increase floodwaters in the floodplain, as a result of impeded flow or added fill.
- Construction storage or staging sites would be located at least 0.25 miles from wildlife and livestock tanks or other permanent surface water bodies to reduce potential effects of accidental spills.
- Allow limited vegetation on slopes and other “unused” areas in designated floodplains that would serve to minimize erosion and limit velocity of surface run-off in floodplains to pre construction conditions.
- Conservation measures would be implemented to preclude unnecessary waste of water supplies.
- Discharges of gray water and other wastes to drainages or other water courses/bodies would be prohibited. Portable latrines would be provided and maintained by licensed contractors and would be used to the extent practicable during construction and operational support activities.

5.8 AIR QUALITY

Mitigation measures would be incorporated to insure that SO₂ and PM₁₀ emission levels do not rise above the minimum threshold of 100 tons per year as required per 40 CFR 51.853(b)(1). Measures would include dust suppression methods to minimize airborne particulate matter that would be created during construction activities. Additionally, all construction equipment and vehicles would be required to be kept in good operating condition to minimize exhaust emissions. Standard construction practices such as routine watering of the construction site and access routes would be used to control fugitive dust during the construction phases of the proposed project.

5.9 NOISE

During the construction phase, short-term noise impacts are anticipated. All Occupational Safety and Health Administration (OSHA) requirements would be followed. On-site activities would be restricted to daylight hours with exceptions of emergency situations. Construction equipment would possess properly working mufflers and would be kept properly tuned to reduce backfires. Implementation of these measures would

reduce the expected short-term noise impacts to an insignificant level in and around the construction site.

If blasting is later determined to be required, appropriate permits would be obtained and notices would be sent to any residents/occupants within 0.25 miles of the blast area. Noise suppression methods, such as blasting blankets and soil overburden, would be used if noise-sensitive receptors are located within 0.25 miles of the proposed blast area.

5.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The Preferred Alternative would have minimal adverse environmental effects on minority populations, as indicated by the demographics of the ROI of the project area. Because over 50% of the affected area is comprised of minorities, the population affected by the proposed action is considered a minority population (EPA 1998). In order to mitigate from visual impacts of the proposed infrastructure construction a decorative fence would be used, to the extent practicable, in areas where it is plainly visible to residential and commercial areas.

The secondary fence corridor, under both action alternatives, were substantially reduced, to avoid displacement of residences and commercial establishments. This mitigation measure was incorporated to the design, even though, it will increase the potential risks to USBP agents and reduce the potential efficiency of the infrastructure system.